



PROJECT/PROGRAMME PROPOSAL

PART I: PROJECT/PROGRAMME INFORMATION

PROJECT/PROGRAMME CATEGORY: **REGULAR PROGRAMME**

COUNTRY/IES: **EGYPT**

TITLE OF PROJECT/PROGRAMME: **BUILDING RESILIENT FOOD SECURITY SYSTEMS TO BENEFIT THE SOUTHERN EGYPT REGION**

TYPE OF IMPLEMENTING ENTITY: **MULTILATERAL IMPLEMENTING ENTITY**

IMPLEMENTING ENTITY: **UNITED NATIONS WORLD FOOD PROGRAMME**

EXECUTING ENTITY/IES: **MINISTRY OF AGRICULTURE, WITH THE MINISTRY OF ENVIRONMENT**

AMOUNT OF FINANCING REQUESTED: **US\$7,287,658 (over 4 years)**

I. PROJECT / PROGRAMME BACKGROUND AND CONTEXT:

I.A. Background:

Egypt has a growing population (currently 81 million¹ and expected to exceed 140 million by the year 2050). Food security is threatened by limited water resources (current per capita water resources are 900m³), and arable land resources (only 3.5 percent of total land area). Land resources are further threatened by a number desertification factors. Climatic conditions in terms of temperature rise and high evapo-transpiration add more complexity and present a number of challenges for food production and food security.

Egypt covers an area of nearly one million km². The Mediterranean Sea lies to the North, the Red Sea to the East (total coastline of 3,500 km), and Libya to the West.

The general climate of Egypt is dry, hot and desert. Lower Egypt's climate during the winter is mild with some rain over the coastal areas, while Upper Egypt is rainless with warm sunny days and cool nights. During the summer, the climate is hot and dry all over Egypt².

¹ Estimate of the Central Authority for Public Mobilization and Statistics based on the 2006 Census

² Egyptian Environmental Affairs Agency. Egypt's 2nd National Communication to the United Nations Convention on Climate Change. May 2010.

Most of Egyptian land is desert. **Only 3.5 percent of its land area is arable** with the total cultivated land reported as 8 million acres of old land in the Nile Valley and 2 million acres of reclaimed land³. Expansion through land reclamation is limited by water scarcity and inefficiency of water use. Egypt's agricultural production has not kept pace with its growing population, and the country remains a net food importer.

Agricultural land is already threatened by a number of factors, including urbanization (which accompanies population growth in villages), sand encroachment from the Western Desert, and salinization of Delta lands due to seawater seepage.

Egypt's total water budget is estimated at about 58 billion m³, 95 percent of which is drawn from the Nile (55.5 billion cu. m.). The remaining five percent is resourced from groundwater and rainfall. Inflowing Nile water is stored in Lake Nasser and shared between Egypt and Sudan. Rain falls mostly in winter and on the Mediterranean coast and does not exceed 130-170 mm⁴. **The per capita water share is less than 900 m³ per year, signifying water stress in the country. Agriculture uses 80 percent of Egypt's water resources. Egypt is among the lower 10 percent of countries in the region in terms of water efficiency in irrigation**, with only limited advancement over the past ten years⁵.

The country currently imports 50 percent of its wheat needs, a staple commodity for Egyptians. Other food products appear in a better situation as per the national statistics. Meat production in Egypt was estimated to be 0.67 million tons/year in 2007 while the demand was 1.01 tons/year. The deficit of 37% is covered through imports. Poultry production was estimated at 0.85 million tons in 2007 compared to demand of 1.095 million tons. Fish production in Egypt is estimated to be 1.1 million tons/year while consumption is 1.25 million tons, with the deficit compensated for by imports. Aquaculture takes up an area of 350,000 acres, providing 63% of the national produce. About 92% of these are fresh water species, mainly tilapia at a rate of 300 tons/acre annually. Approximately 8% of aquaculture are marine producing mullet, sea bass, sea bream and shrimps. Some 98.8% of aquaculture is in the Delta and Lower Egypt, with less than 1.3% in Upper Egypt. Accordingly, most of the fish needs of Upper Egypt are imported with prices some 30-50% higher than those in Lower Egypt⁶.

Egypt is categorized as a lower middle income country, with a GNP per capita of USD 2,070 in 2008. Until 2010, Egypt's economy grew at a rate of more than 7 percent a year. However, this masked growing income disparity and increasing poverty. Egypt's Gini Coefficient was 34.4 percent in 2008, suggesting a high degree of income inequality.⁷ The proportion of jobless youth reached about 60 percent in 2010⁸. Increasing poverty and unemployment trends led to a popular uprising in January/February 2011, which led to the President stepping down. Egypt's interim government has managed to keep the economy moving, but the growth rate fell to 1.9 percent in 2010/2011⁹.

Unfortunately, this is happening concurrently with an unprecedented global spike in food prices in 2011¹⁰. The country is highly vulnerable to food price shocks. Nominal wheat prices on domestic markets increased by 32 percent in 2010 and rice by 42 percent¹¹.

³ Ministry of Agriculture. National Strategy for Climate Adaptation in Agriculture. August 2010.

⁴ Excerpt from Egypt's 2nd National Communication to the United Nations Convention on Climate Change. May 2010.

⁵ Egypt National Competitiveness Council. 2009. Egyptian National Competitiveness Report.

⁶ Egyptian National Strategy for Climate Change Adaptation in Agriculture, May 2010

⁷ Government of Egypt. 2008. Egypt Demographic and Health Survey (DHS).

⁸ Egypt Human Development Report (2010). Ministry of Planning and UNDP.

⁹ Central Bank of Egypt. Monthly Statistical Bulletin. September 2011.

[http://www.cbe.org/public/All_Monthly_Statistical_Bulletin_PDF/2011/Bulletin_2011_09_Sep/08_Indicator\(Real_Sector\)1.pdf](http://www.cbe.org/public/All_Monthly_Statistical_Bulletin_PDF/2011/Bulletin_2011_09_Sep/08_Indicator(Real_Sector)1.pdf)

¹⁰ FAO Food Price Index. 2011. <http://www.fao.org/worldfoodsituation/wfs-home/foodpricesindex/en/>

¹¹ FAO/GIEWS. North Africa Brief. March 2011.

Inflation is expected to peaked at 15 percent during 2011, with food prices comprising 40 percent of the consumer price index¹². Despite government's heavy subsidies on wheat flour and bread, consumers are not fully exempted from the impact of global food price rises as prices of non-subsidized products, pulses, staples and animal products have increased.

Additional: Since 2006, Egypt's food security has been impacted by a series of shocks, including the avian influenza epidemic and the combined food, fuel and global financial crises, topped by recent political events which have contributed to stalled economic growth in key sectors such as tourism and construction. The impact on food security has been compounded by the influx of returning workers from Libya who originated from the most vulnerable districts in Egypt, and whose return represents a significant loss of income for entire communities. A joint assessment, carried out in March 2011,¹³ found that many returnees' families were facing the threat of food shortages. The assessment found the same worrying situation among other groups affected by recent events, such as internal migrants returning from other parts of Egypt as a result of the slowdown in the tourism and construction sectors.

CR2:

I.B. Climate Change and Food Security in Southern Egypt

The country is comprised of three agro-ecological zones, namely Lower, Middle and Southern (also known as Upper) Egypt and Egyptian agriculture is characterized by smallholdings (less than 0.4 of a hectare).

Southern Egypt (see Figure 1) is comprised of five Governorates, namely Assiut, Sohag, Qena, Luxor and Aswan and has a population of 12 million, of which almost 10 million live in rural communities. It has a cultivated area of 1.13 million acres, constituting 14% of the country's agricultural land¹⁴. It is home to 37 percent of Egypt's population and 45 percent of the country's rural population¹⁵. With 45.8% of households living under the national poverty line, more than twice the rate elsewhere, and 15.6% of its population designated extreme poor, **Southern Egypt region is the poorest region in the country**¹⁶.

¹² Economist Intelligence Unit. Egypt Country Report. March 2011.

¹³ Joint WFP/UNICEF Rapid Assessment on the Situation of Returnees from Libya in the Governorates of Assiut and Sohag, March 2011.

¹⁴ Helmy, Eid et al, Assessing the Economic Impacts of Climate Change On Agriculture in Egypt: A Ricardian Approach, July 2006

¹⁵ Egyptian National Agricultural Adaptation Strategy, May 2010
Egypt Human Development Report (2010). Ministry of Planning and UNDP

¹⁶ Egypt Human Development Report (2010). Ministry of Planning and UNDP.

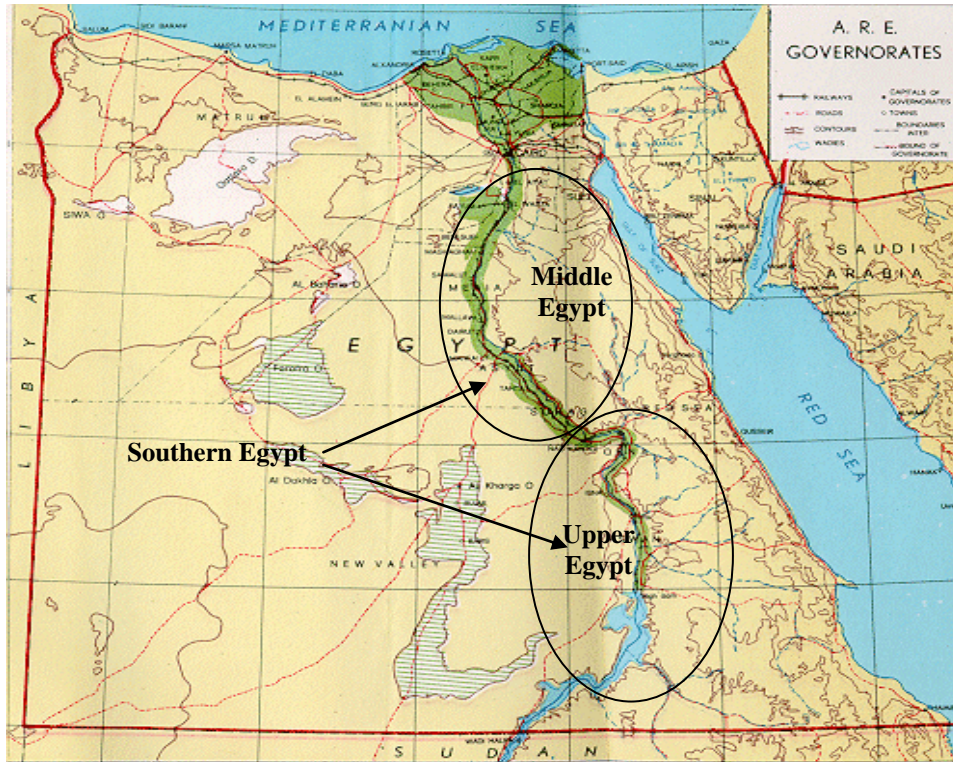


Figure 1: Southern Egypt on the map

According to Egypt's Second National Communication, Egypt is one of the world's most vulnerable countries to the potential impacts of climate change¹⁷. Southern Egypt, in particular, faces some of the worst climatic shocks and is subject to higher rates of temperature rise in the future. Figure (3) shows that this region is also expected to continue to suffer from the highest rates of temperature rise (up to 1.5-2° C on average by the year 2040) compared to the Nile Delta region

The following table shows temperature data from the Egyptian Meteorological Authority over the past 40 years.

Zone	Governorate	Mean Temperature
Lower Egypt	Alexandria	20.2
	Port Said	20
	Behera	20.7
	Damietta	20.2
	Kafr El Shiek	19.2
	Gharbia	20.4
	Dakahlia	20.9
	Sharkia	20.7
	Monofia	21.2
	Qualiobia	21.1
	Ismailia	20.4
MEAN	20.48	
Middle Egypt	Giza	20.5
	Beni Suef	21.5
	Fayoum	22
	Menia	21.1

¹⁷ - Egypt Second National Communication (ESNC) EEAA May 2010; and
 - World Bank (2009). Convenient Solutions to an Inconvenient Truth: Ecosystem-based Approaches to Climate Change. Environment Department Report.

	MEAN	21.28
Southern (Upper) Egypt	Assuit	22.9
	Sohag	22.9
	Qena (and Luxor)	24.9
	Aswan	26.9

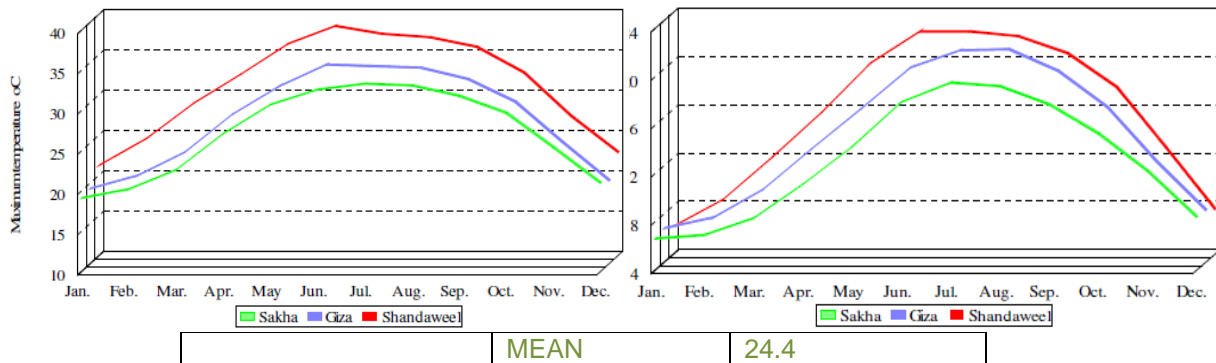


Figure (2) Mean maximum and minimum temperatures in Northern and Southern Egypt

Figure 2 graphs the mean maximum and minimum temperatures, showing they are lower in Northern Egypt (represented by Sakha research station) than Southern Egypt (where Middle Egypt is represented by Giza and Upper Egypt is represented by Shandaweel in Sohag)¹⁸.

Food production is comparatively lower in Southern Egypt than elsewhere in the country. The higher temperature of the zone is a key factor contributing to lower agricultural productivity. On one hand, the climate impacted environment is forcing people to overexploit their already stressed natural resources, mainly land and water, to compensate for low productivity. On the other hand, low productivity is one of the key reasons for chronic poverty, preventing people from investing to enhance their productivity through the provision of inputs and maintenance of land, leading to further deterioration of the resource base and ultimately incomes¹⁹.

Southern Egypt is also experiencing more severe and unpredictable weather. Heat and frost waves are now happening more frequently, are more intense, and are more unpredictable. Resulting crop failures have been on the rise in the zone. Although no official data is published to quantify crop losses from more erratic weather, failures of fruits and vegetables, and the affect on prices, are well known, widely reported in the media, and are of increasing concern to producer groups.²⁰

With respect to food security, **Upper Egypt, in particular, comprises most of the severely deprived governorates.** Malnutrition has undergone a sharp rise in recent years. Stunting rates rose from 23 percent to 29 percent between 2005 and 2008 among children under five, and anaemia rose from 25 percent to 50 percent between 2000 and 2005²¹.

¹⁸ Eid, H. El_Marsafawy, S and S. A Ouda. Assessing the Impact of Climate on Crop Water Needs in Egypt: The CROPWAT Analysis of Three Districts. Report on a GEF funded project in Africa, including Egypt.

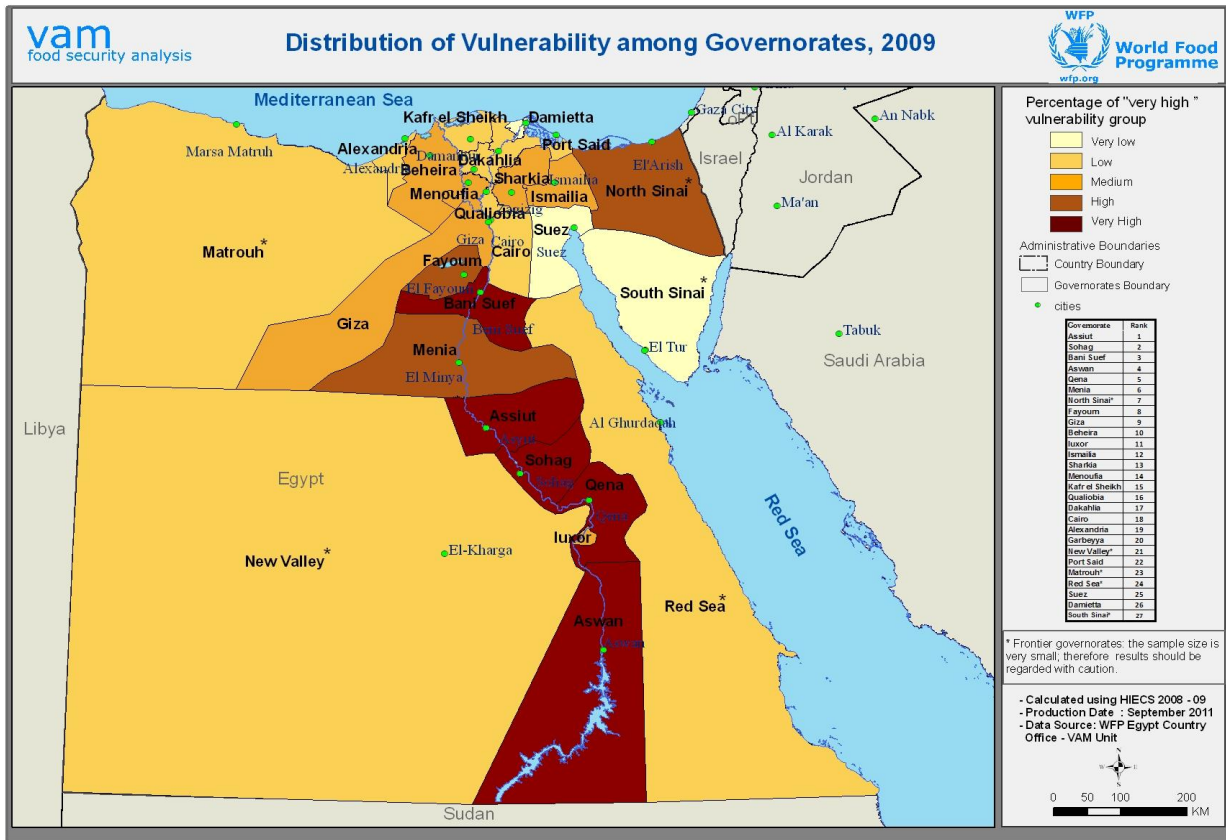
¹⁹ Conclusions of 'The Environment of Poverty and Poverty of the Environment' conference. Menia University. 1999.

²⁰ Interview with the Chairman of the Agricultural Federation of Qena, Southern Egypt, July 2011

²¹ Macro International. Demographic and Health Surveys. 2005 and 2008. United States Agency for International Development (USAID)

Figure 2. Upper Egypt governorates are the most vulnerable to food insecurity.

Obtained from WFP’s unpublished food security atlas (2011), the figure is drawn based on food security vulnerability index, which links income poverty, food share, health conditions, education level, standards of living and access to social and health insurance.



I. C. Impacts of Climate on Food Security in Southern Egypt

Southern Egypt’s vulnerability to climate change and variability will impact its food productivity and security in several ways as follows:

Reduced crop productivity

Studies indicate that the expected increase in temperature (see Table 1) will affect crop yields and give rise to pests, many of which are unknown to farmers. This will reduce agricultural productivity and production of the zone, which in turn affects the incomes of the 55 percent of the labor force engaged in agriculture, and the millions more – especially women - engaged in micro-enterprises that depend on agriculture.

Table 1. Projected Changes in Crop Production in Egypt Under Climate Change Conditions Source: Egypt Agriculture Climate Adaptation Strategy (2010)

Crop	Change percent	
	2oC temp. Increase	4oc temp increase
Wheat	- 14	- 36
Maize	- 19	- 20
Soybeans	- 28	
Barley	- 20	
Cotton	+ 17	+ 31

Reduced availability of water resources:

Food availability is affected by the vulnerability of Egypt's water resources due to sensitivity of the Nile water levels to Ethiopian rainfall, and temperature rise upstream. The results shown in Table 2 I below indicate that the Nile flows are sensitive to climatic changes. With 4°C warming and 20 percent reduction in precipitation, Nile flows may decrease by 98 percent. With a 20 percent reduction in precipitation and 2°C warming the decrease may be 88 percent.

If no change in temperature took place the decrease may reach 63 percent for a 20 percent reduction in precipitation. Strezpek et al (2001)²² developed ten different scenarios for Nile flows. Only one of the ten scenarios predict eventual increase in the distant future, the other nine scenarios show long term reduction ranging between 10% and 90% by the year 2095.

Table 2: Climate Change and Nile Flows²³

Climate Warming, °C	Change in Precipitation, percent	Change in Nile Flows, percent
+4	-20	-98
+2	-20	-88
0	-20	-63
+4	+20	-68
+2	+20	+1
0	+20	+71

Egypt relies on the Nile to provide 95% of its water resources. The country's sensitivity to changes in precipitation rates on the Ethiopian Plateau and increases of temperatures and associated evaporation losses is thus extremely high. In particular, as 85% of the water resources is used in agriculture production, any deficit in Nile water flow will directly affect food production and security, particularly in Southern Egypt, where crop -water demands will be increasing with temperature increases.

Rising crop pests and disease levels

Higher temperature causes negative effects in the form of rising crop pest levels that negatively affect crop productivity.²⁴ Scientific observations confirm that the severity of some pests and diseases affecting strategic crops has increased in the last few decades. Examples include severe epidemics of tomato late blight (*Phytophthora infestans*) witnessed heavily in Southern Egypt last year, wheat leaf rust caused by *Puccinia triticina* and stripe rust disease caused by *Puccinia striiformis* due to increasing temperature.²⁵

Increasing crop-water requirements and reduced water use efficiency:

Projected temperature rise is likely to increase crop-water requirements and decrease crop water use efficiency. In fact, crop water requirements of Egypt's strategic crops are expected

²² Strezpek, K.M., Yates, D.N., Yohe, G. Tol, R.J.S. and Mader, N. (2001), Constructing "Not implausible" Climate and Economic Scenarios for Egypt, Integrated Assessment 2, 139-157, Integrated Assessment Society.

²³ Egypt Second National Communication (2010)

²⁴ Egypt Second National Communication (2010)

²⁵ Abolmaaty, S.M. (2006), Assessment of the Impact of Climate Change on Some Rust Diseases for Wheat Crop Under Egyptian Environmental Conditions, PhD Thesis, Faculty of Agriculture, Al-Azhar University.

to increase from 6 to 16 percent at temperatures increases of 2 and 4 degrees respectively²⁶. As depicted in the map below, Southern Egypt will be prone to more (200-400 mm) evapotranspiration than elsewhere in the country by 2040, posing more demand for water resources in the zone.

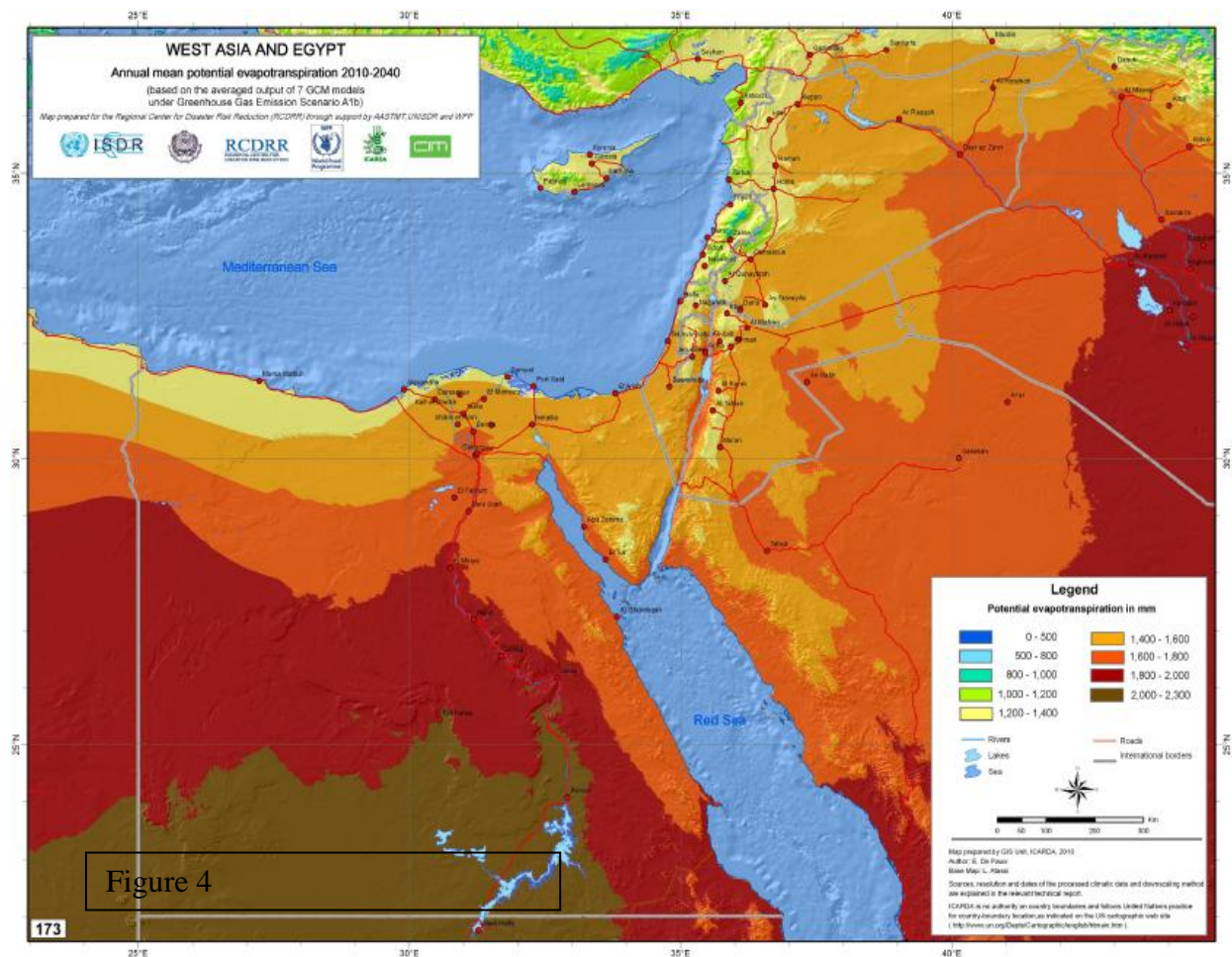


Figure 4

Source: W. Göbel and E. De Pauw. 2010. Climate and Drought Atlas for Parts of the Near East A baseline dataset for planning adaptation. Report by the International Centre for Agricultural Research in Dry Areas (ICARDA)

Reduced livestock productivity

Climate-induced heat stress reduces livestock productivity. New animal diseases, including Blue Tongue disease and Rift Valley fever, have emerged in Southern Egypt. Both are attributed to observed changes in the Egyptian climate²⁷. The availability of fodder is at risk due to climate change impacts on crop productivity, as well as higher competition for land and water resources between fodder and cereal crops.

It is reported that the increase in temperatures are hazardous to laying hens, not only because of greater mortality rates, but also because of the reduction in the number and quality of the eggs produced²⁸. Research results indicate that low growth occurred with

²⁶ Egypt National Environmental, Economic and Development Studies (NEEDS) for Climate Change. Under UN Convention on Climate Change, April 2010 and Egypt Second National Communication, May 2010.

²⁷ Egypt National Environmental, Economic and Development Studies (NEEDS) for Climate Change. Under UN Convention on Climate Change, April 2010

²⁸ Dagher, N.J, Nutrient Requirements of Poultry at High Temperatures, Poultry Production in Hot Climates, 2008

increases of temperatures of just 1-2 degrees, and with a direct effect on the central nervous systems of birds, reducing metabolic rate, feed consumption and egg yolk precursors. The birds' reproduction rates are also reported to decrease in high temperatures as a result of changes in semen characteristics and retardation of testicular development²⁹.

In conclusion, Southern Egypt is the most vulnerable of the country's three agro-ecological zones to climate change impacts on food production and security from the standpoint of temperature, drought and evapotranspiration. It stands to lose up to a minimum of 30 percent of its food production by 2050 as a result of the climate change impacts including reduced crop and livestock productivity, **increasing crop-water demand and reduced water use efficiency**, increase in pest and disease infestations. etc. This compounds the already economically-stressed and food -insecure zone.

The socio-economic impacts of climate change-induced food insecurity will be significant on the communities of the zone. In an attempt to quantify the economic impacts of climate change on agriculture in Egypt, a study concluded that a reduction of approximately USD580 and USD1380/acre would occur on annual farm revenue with temperature increases of 1.5°C and 3.6°C, respectively, if no adaptation efforts are undertaken³⁰ **(also relevant for CR5)**. For a household that relies on agriculture for a living (55% of the zone's households), this reduction can represent up to 80% of its total income. As a result, livelihoods of the already economically- stressed smallholders of the zone will be at stake. This will not only affect the growers, but also those involved in raising livestock, post harvesting activities and products, being mainly poor women. Impacts on nutritional status of families are also expected to transpire, with children and women being the most negatively impacted.

I.D. The Proposed Project

The project aims to achieve two objectives: 1. Increase the resilience of agriculture in Southern Egypt to climatic changes; and 2. Build institutional capacity within government and communities to enable climate change adaptation replication and sustainability. Component 1 will introduce and scale up proven approaches to food security, livelihoods and natural resource management in Southern Egypt. Component 2 will build national, sub-national and community capacity for climate adaptation, as well as document lessons learned and best practices.

The project is a central tenant in the Government's National Adaptation Strategy and Agricultural Climate Change Adaptation Strategy.³¹

I. E. Project Locations:

CR1

The project will be implemented in areas of the "Southern Egypt" region as defined above. Three governorates/areas were selected **based on vulnerability to climate change and food security**. Other governorates in Southern Egypt face the same climate related constraints as

²⁹ Hassan, I.I. et al, Effect of Siliuim Sources and Levels and Vitamin E on Productive and Reproductive Performance of Matrouh Layers Under Egyptian Summer Conditions, 5TH International Poultry Conference, TABA, Egypt, 2009

³⁰ Eid, Helmy et al. Assessing The Economic Impacts of Climate Change on Agriculture in Egypt, 2006

³¹ The Government has prepared a strategy for climate change adaptation in the agricultural sector. The strategy forms the section on agriculture in the National Adaptation Strategy for Egypt, which is still in draft. It focuses on the expected risks of climate to productivity of ten major crops, animal production, and fisheries. The strategy singles out the need for developing new areas and exploring and disseminating water efficient and heat resistant crops and methods of production.

those selected form the project. The exact project locations within each governorate will be selected in a participatory manner with local authorities and community organizations, as part of the baseline survey carried out during project appraisal. The choice of locations will combine old traditional villages along the Nile and newly developed areas. A key criterion in selection of locations is that they are representative of different livelihood contexts. The Nile valley is composed of old land and new land (horizontal expansions into the desert by the government or the people themselves – see box on p.25). This project will show that solutions can be provided for both contexts. The Lake Nasser region will be a sample of new lands development and Assiut and Sohag villages will represent old lands. Lake Nasser faces the same climatic stresses as the rest of Southern Egypt, and is among the poorest governorates in Upper Egypt. Assiut and Sohag represent Middle Egypt. Thus, the selection covers the two main sub-regions of Southern Egypt.

A climate and food security vulnerability Atlas being prepared by the Government with WFP assistance, and which will be finalized before full project preparation, will help confirm project locations. Specific villages to be targeted by the project within the governorates will be selected through a thorough beneficiary consultation and assessment as part of the full proposal preparation

1. Assiut Governorate:

Assiut lies in the Middle Egypt region (a sub-region of Southern Egypt). It has a population of about 3.5 million of which 2.2 million live in rural areas. There are no major towns outside the capital city. Agriculture is the main activity, and the main crops are cotton, grains, vegetables and lentils. The main livestock is poultry, which is sensitive to heat shocks.

The governorate stretches about 120 kms along the banks of the Nile, while stretching into the Eastern and Western deserts. This provides the governorate with significant potential for land reclamation. The government has provided significant assistance to Assiut – being classified as the poorest and most food insecure governorate – to expand by establishing a number of new villages, some of which would be agricultural.



2. Sohag Governorate:

Sohag lies in the Middle Egypt region, south of Assiut. It has a population of about 3.8 million people of which the vast majority are in rural areas. Agriculture is the main activity.

The governorate stretches about 100 kms in a narrow strip along the banks of the Nile, constrained from any desert expansion from stretching into the Eastern and Western deserts. This limits the governorate's horizontal expansion potential, and makes it ideal for an adaptation demonstration within old lands. Sohag is classified among the top five governorates in terms of food insecurity.



³² In 2007, the Government declared its intention to target the poorest 1000 villages (out of an overall total of around 5000 villages). The choice of the 1000 poorest villages was based on Egypt's 2006 poverty map, developed by the Ministry of Economic Development. These 1000 villages will be targeted for a significant level of investment in an integrated package of basic services.

3. Aswan Governorate (Lake Nasser zone).

This is the country's main fresh water reservoir, and unique in terms of its food production potential. A study undertaken by the Egyptian Scientific Research Academy in 2009 to identify and compare locations for horizontal expansion concluded that the Lake area is one of the most viable locations for agricultural development due to availability of freshwater and suitable land for cultivation. The Government decided to develop the Lake Nasser area, establishing it as a new food production zone that, with an additional 2 million mouths to feed annually, would help in bridging the widening food production gap. Activities in this location will demonstrate how adaptation can be applied in the context of new lands development.



II. PROJECT / PROGRAMME OBJECTIVES:

II.A. Overall Objective

The Government of Egypt wishes to 1) improve the adaptive capacity of the Southern region of the country in the face of anticipated climate-induced reduction in food production and 2) build institutional capacity at all levels to enable sustainability and replication. The two objectives are corner stones of Egypt's National Adaptation Strategy.

Component 1. Adaptation to climate change through technology development and transfer.

Objective: Enhance climate resilience and improve food security in Southern Egypt, to serve the 45 percent of Egypt's rural population living in this region.

Component 2. Capacity building for climate knowledge and adaptation replication

Objective: Build capacity at national regional and local levels to understand climate trends and impacts and replicate adaptation interventions

PROJECT / PROGRAMME COMPONENTS AND FINANCING:

Table 5. Components, Outcomes and Financing

Project Component	Expected Concrete Outputs	Expected Outcomes	Amount Requested (US\$)
1. Adaptation through technology development and transfer	1.1. Community level mobilization and climate adaptation planning (including baseline assessment, and community awareness activities)	CR3: 73,000 direct beneficiaries in Upper Egypt communities are more resilient to climatic shocks and change through more available water resources, more resilient soils, able farmers to predict and manage climatic episodes, and enhanced rural incomes	500,000
	1.2. Establishment of a climate change and food security monitoring system		300,000
	1.3. Introduction and use of water saving irrigation and other adaptation techniques		1,985,500
	1.4. Establishment of agro-forestry greenhouses and plots with sub-surface irrigation, including nurseries for growing trees and new varieties		1,070,000
	1.5. Development of livestock and poultry hubs for selection and breeding of new heat resistant varieties.		1,450,000
Subtotal Component One			5,305,500
2. Capacity building for climate knowledge and adaptation replication	CR10	Government, civil society and farmers are able to make appropriate choices for interventions based on improved climate knowledge and lessons learned transferred to 5500 personnel	
	2.1 Training of government technical staff		350,000
	2.2. Documentation of lessons learned and best practices		200,000
	2.3 . Sharing project results and lessons learned and mainstreaming new approaches in local and regional planning		300,000
	2.4. Universities integrate climate adaptation solutions into their academic curriculum		100,000
Subtotal Component Two			950,000
TOTAL			6,255,500
Project execution costs (9.5 percent)			594,273
Management, monitoring, reporting and evaluation (7 %)			437,885

GRAND TOTAL		7,287,658
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Project Execution Costs

ITEM	US\$
Project Technical Manager	136,000
Project Office support staff	71,000
Vehicle and office equipment	40,000
Operational cost of Project Office	55,000
Travel	29,273
Project Coordinator (WFP)	120,000
Project Monitoring and Evaluation	143,000
TOTAL	594,273

PROJECT CALENDAR:

Milestones	Expected Dates
Midterm review	May 2014
Project Closing	April 2016
Terminal Evaluation	October 2016

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

The proposed project is a key element in Egypt's climate adaptation strategy in three crucial respects: 1) it will apply adaptation technologies that will assist Southern Egypt- both the old lands and new developments- to cope with rising temperature and low water availability, 2) it will generate knowledge, document lessons learned and best practices on climate-proofing of agricultural production, and 3) it will enhance food security in the face of climate threats.

Component 1. Adaptation through technology development and transfer

CR4

Interventions as part of Component 1 are based on the current state of knowledge regarding climate adaptation from national and global experience and research and initial beneficiary consultation. The actual set of activities to be implemented may differ somewhat from one location to another according to what communities need, as well as landscapes, soil

composition, available infrastructure including connections (roads), energy source, water availability, etc.

During project appraisal consultations will focus on the trade-offs associated with various adaptation measures. For example, although agroforestry would lessen the heat effects of direct sunlight on crops and protect cultivation from sand encroachment, trees use valuable water that could be used to produce higher return produce or livestock. Consultations will weigh such trade-offs and allow beneficiaries and the Government to choose the most appropriate adaptation options with the understanding that the beneficiaries themselves will be responsible for managing the interventions and maintaining created assets well beyond the life of the project.

The actual number of beneficiaries and number of acres directly covered by the project will be presented with greater resolution in the full proposal based on finalization of locations and consultation with beneficiaries. The hypothesis at the concept stage is for approximately 500 acres to benefit from improved irrigation and soil amendment in each of the three locations, and for an additional 3500 acres to benefit from other interventions such as livestock raising, training and awareness. The proposed number of beneficiaries is listed in table 6 in the document, but subject to modest amendment in the full proposal.

Output 1.1. Baseline assessment and community mobilization

The baseline protocol is yet to be drawn but will focus on assessing resources and climate risks in the area, food security, food production, resource utilization practices, among other relevant factors.

Community mobilization and engagement involves the following steps:

- Select 30 volunteers from each project location to work under a well-chosen community organization that provides the institutional structure to manage community based activities. To avoid conflict of interest, the volunteers will not be selected from among the farmer beneficiaries, and are given clear terms of reference.
- Mobilize and train community volunteers to raise awareness about climate change and variability to explain the changes and shocks communities have been observing, especially in agriculture, and educate communities on preparedness techniques in agriculture and livestock.
- Involve the volunteers in a baseline assessment of prevailing issues and community strengths and resources, and in formulating an adaptation plan for their locations, indicating climatic risks most pertinent to them, appropriate interventions and timeframe, required resources. Develop a business plan for scaling up and sustaining suggested interventions.

Output 1.2. Establishment of a climate and food security monitoring system in the project areas

There are currently four monitoring stations on Lake Nasser which will need to be upgraded to be effectively utilized by the project. There are no climate monitoring stations in the Assiut and Sohag Governorates. The output will upgrade the capacity of climate monitoring, forecasting, analysis, and reporting/dissemination of data and information in the Southern Zone. Key indicators include temperature, wind speed and direction, drought, evapo-transpiration, soil organic matter content and sensitive biodiversity indicators. The future outlook is for this unit to eventually be networked with other units with a view to building a nationwide system to support decision making.

Responses to CR1

A nationwide **climate monitoring** system is part of the planned Agricultural climate adaptation strategy, and is envisioned to be managed by the Agricultural Climate Adaptation Centre of the Ministry of Agriculture. The Centre has already procured one climate monitoring station for the Rachid area in the Northern Delta. The project will help the Centre link the already established units in the Lake Nasser area as well as introduce **a new unit in Assiut or Sohag, that provide full coverage of the Southern zone. The operation of stations in the far South, Middle Southern and Northern Egypt will enable the startup of a full nationwide climate monitoring network.** The project will also provide technical assistance on development of the monitoring system, and utilization of the data/information for better decision making, forecasting, providing advice to farmers, knowledge management, and risk assessment to inform investment.

Output 1.3. Introduction and use of water saving irrigation and other adaptation techniques

Interventions will include:

- **Efficient irrigation technology and practices covering up to 1500 acres.** The choice of low-cost technologies and techniques will be chosen based on an assessment in each location. This will be conducted in a participatory manner. Choices of irrigation efficient technologies and practices will be derived from a host of already proven techniques including technologies such as **strip irrigation, gated pipes**, land leveling, and drip, subsurface, or sprinkler irrigation (or a combination thereof); to simple techniques such as managing irrigation hours, and choosing hours of the day when irrigation is conducted, and practicing aggregated cultivation to reach economies of scale. Agroforestry (output 1.4) will indirectly have effects on irrigation water conservation as it affects water evaporation and evapotranspiration.

The techniques selected for each village will be determined in the course of the full proposal preparation in participation with beneficiaries and farmer organizations in each village. The exact type of benefits and number of acres and beneficiaries will also be verified in the course of the full proposal preparation, although the hypothesis now is to cover 500 acres in each of the three governorates.

- **Soil enrichment by amendment** (composting, treated municipal waste materials, treated sludge) and reducing water consumption, by efficient irrigation and introducing drought tolerant crop varieties; selection of heat tolerant, disease tolerant and short- age cultivars of the important crops; adjusting crop rotation as a means of adaptation to temperature rise and heat shocks. This will service a pilot demonstration of 1500 acres. This activity will be applied in all project locations, but the exact technique will be designed based on a participatory baseline assessment.

Output 1.4. Establishment of agro-forestry greenhouses and plots with sub-surface irrigation, including nurseries for growing trees and new varieties

Dryland agro-forestry, using heat resistant varieties is an effective approach for shielding agriculture from the effects of high temperature and direct sunlight. It is effective in reducing the evapotranspiration rates of cultivated crops, **and protecting them from sand encroachment from the Western desert (a leading cause of desertification along the Nile Valley and Lake Nasser).** It is an integrated approach, which uses the interactive benefits combining trees and shrubs with crops and/or livestock. It combines agricultural and forestry

technologies to create more diverse, productive, profitable, healthy and sustainable land-use systems. It also prevents water pollution.

Agroforestry may be applied in project areas for the above purposes upon demand of the community. They will be fenced to prevent grazing and supported with subsurface irrigation. The selection of trees will depend on the ecology (water requirements), and indigenous types will be given a priority although using enhanced breeds. Some crops, mainly traditionally-grown vegetables, will be planted among the trees. Onion, garlic, tomato, vegetables, fodder plants and medicinal plants. Nitrogen produced by nitrogen fixation bacteria³³ hosted by roots of leguminous trees may also be used to maintain soil organic matter, which is destroyed in high temperatures.

The project will finance the cost of technical assistance, establishment of tree nurseries, fencing, land preparation, planting of trees, and the cost of labor in undertaking these activities.

Trees provide economically important products, such as timber, building material, fuel wood, food, medicine and fodder as well as other novel commodities. Important services include shade, shelter, erosion/sand encroachment control, watershed protection, soil enrichment, conservation of biological diversity and wildlife, etc. Such farms will be communal activities and benefits will be equitably shared by communities.

The tree nurseries established under the project will serve as hubs for the provision of seedlings for other areas of the region. The capacity building for climate knowledge and adaptation replication efforts to be undertaken under Component 2, along with the visible benefits attained by agro-forestry, will be strong drivers of replication throughout the region, where farmers will wish to implement it at their own expense.

Output 1.5. Development of livestock and poultry hubs for selection and breeding of new heat resistant varieties.

The aim will be to increase food production in the community despite the climatic challenges, and improve child nutrition, as it will provide domestically-grown birds at affordable costs on which household members, particularly children can feed. This is much needed considering that Assiut, and Sohag (as well as Lake Nasser communities) rank among the top five locations with protein deficiency in the country. The intervention will also enhance women's role in society, being the key guardians of livestock raising in rural Egypt.

Specific tasks will include:

- Provision of awareness and training for women on animal rearing and poultry raising under climatic changes faced by the region.
- Introduction of seed cattle and goat heads as a startup livestock fund for the community through provision of seed animals.
- Provision of awareness, training and veterinary services regarding effect of climatic changes and shocks on animal raising and adaptation techniques.

³³Through a symbiotic relationship with nitrogen-fixing bacteria, legumes are able to convert atmospheric nitrogen into a form that plants can use. Because of legumes' nitrogen-fixing capabilities soils are enriched in nitrogen and plants or crops can be grown without supplemental fertilizer.

In all three project areas the project will consider establishing a hub for fattening livestock. The optimal location (s) will be identified during project implementation with the participation of beneficiary communities. Communities involved with the livestock hub will be provided with training in animal care, market access, and selection of heat resistant and high yielding animals.

Bedouin intervention below removed as part of response to CR3

~~(On the eastern side Bedouin livelihoods are based on livestock transhumance. The proposed output will aim to assist a smooth transition from transhumant pastoralism to agro-pastoralism, which is sedentary, or semi-transhumant livestock farming that links crop-growing and livestock. The emergence of agro-pastoralism is associated with both the decline in range resources as and livestock numbers and productivity. The shift from traditional (mobile) pastoralism to agro-pastoralism is a form of adaptation to prolonged drought.) TO BE REMOVED~~

~~This output will include upgrading the fattening and feeding program in Wadi Allaqi and small scale cultivation of fodder, animal identification, vaccination, vet services, reproduction and animal insemination, parasite treatment and animal waste treatment.~~

In Assiut and Sohag communities, consultations indicate that the most pressing issues are the need to adapt to heat shocks, drought and floods and their effect on agriculture and livestock raising; the need to reduce water consumption, and the ability to cope with food shortages during shortages. Additional consultations will be carried out in the course of full proposal preparation, including identifying specific interventions and undertaking detailed work plans for each community.

Activities will include strengthening the capacities of communities by providing the technical support for improving livelihoods, introducing new technology and training, raising the gender issue, and raising awareness on climate change and adaptation.

As part of the project appraisal process - i.e. after the project concept is approved and before submission of a full proposal - a prefeasibility and a work plan for each community will be conducted for outputs 1.3-1.5.

Component 2 . Capacity building for climate knowledge and adaptation replication

CR10. Interventions in Component 1 will be scaled up as part of the government's 1000 village initiative, and relevant national programs as they are started by the new government. At a minimum, lessons learned will be retained and disseminated to all actors involved in the 1000 poorest village initiative in order to replicate them in the Government's first phase of support to 151 villages covering some 1.7 million

The project will work on various levels including supporting a knowledge forum at the level of assisted villages; capacity building of key government staff, partly through organized workshops but largely on-the-job through engagement in project activities. The project will also contribute to policy analysis and advisory services to central and local government; conduct advocacy with new parliamentarians and local council members on the risks of climate change to food security; and engage key civil society organizations (such as the newly found Farmers Syndicate and the Farmers Union) on all those fronts. A key means of retaining and disseminating knowledge is engagement of universities, particularly prominent local universities such as Assiut University and South Valley University (in Aswan).

Output 2.1. Building capacity of government technical staff

This output will design and implement a variety of training courses for government technical staff, particularly those in the 1000 Village Initiative, new projects that maybe started by the new government, and national research centres such as the Climate Change Research Centre under the Ministry of Agriculture.

Capacity will be built on climate analysis and prediction; climate change and food security vulnerability assessment, and the identification of adaptation options and evaluation of costs. The training will be a mix of classroom and on-the-job training.

Project appraisal will include an institutional assessment which identifies the content of training, training modalities and which government (central and local) should be involved. The results of the assessment will be included in the full proposal.

Output 2.2 Documentation of lessons learned and best practice

This output will document knowledge and lessons generated through:

- Brochures that give summary information about implementation approaches, best practice and key lessons learned. The information will be easy to read and pictorial. The target group will be farmers, extension officers, local NGOs, and Government technical staff, particularly in the directorates of Irrigation and Agriculture in Aswan, Assiut and Sohag.
- More detailed, technical reports targeting government workers, NGOs and community organizations in Southern Egypt.
- A promotional material that provides a general overview of the project, its components and expected outcomes. This will be disseminated among partner agencies, and national local authorities, including local and national political representatives.
- A 20 minute documentary. The CD will be disseminated to concerned stakeholders including the governorates, NGOs, the Ministries of Agriculture, Environment, Irrigation, Social Solidarity, Planning and Finance at local and national levels, and members of the development partner group working in Egypt.
- Materials for an orientation program targeting new government officials, including a one hour briefing package for Ministers and senior government and full 2-day training for new technical staff in Ministries.

A network of local practitioners will be created and sustained which will, during the life of the project, be linked to and catalyzed by the activities surrounding project monitoring and reporting. It will include farmer organizations, extension workers, community volunteers who participate in the baseline and evaluation of the project, and select beneficiary farmers. Champions in the network will document best practice and lessons learned and these will be shared through dedicated brochures, workshops and submissions to local media.

Output 2.3. Sharing project results and lessons learned and mainstreaming new approaches in local and regional planning

This output will promote mainstreaming of adaptation to climate change impacts on food production in local and regional planning. This will be accomplished through a package of complementary activities including:

- A training course for non-technical government officials and new parliamentarians on the concept of climate change and food security, analysis conducted for Egypt, and knowledge generated under the project
- Presentations to Ministers and senior government officials
- Site visits by relevant officials
- Organized events for beneficiaries to present their experiences to other potential beneficiaries
- Annual workshops that join project actors from community, department, regional and national level to discuss opportunities and constraints, and share experience and learning.
- Integration of reports into ministry of Agriculture and Environment's on-line data base.
- Broadcast of the project documentary on the Egyptian Agricultural Satellite Channel of the Ministry of Agriculture

Output 2.4 Universities integrate climate adaptation solutions into their academic curriculum

The project will engage experts from local universities, in particular Assiut University and South Valley University. Agreements will be signed with university management to enable them to engage students in field research, and to use knowledge generated under the project in enriching university curricula.

B. Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities.

The number and types of beneficiaries are listed in Table 6, below. The project will provide a full range of multiple benefits, including the following:

CR5 Economic benefits are principally the salvaged reductions in farm production on agricultural land. Considering a total of 14,600 acres that are directly benefiting from better management under this project, and the salvaged economic damage due to climate change estimated at USD 1380/acre/year (based on higher temperatures of 3.6°C as estimated by the GEF-funded Study on Assessment of Economic Impacts of Climate Change on Agriculture in Egypt), economic benefits amount to USD 20.148 m/year. This is in addition to direct transfers in the form of assets valued at approximately USD 2m, which raises the total economic benefit to USD 22.148mre basically the salvaged reductions in farm production on agricultural land. Considering total of 14,600 acres that are directly benefiting from better management under this project as demonstrations, and a salvaged economic damage due to climate change estimated at USD 1380/acre/year (based on higher temperature over the Northern Egypt mean by 3.6°C estimated by the GEF-funded Study on Assessment of Economic Impacts of Climate Change on Agriculture in Egypt- see above), the economic benefits amount to USD 20.148 millions/year. This is in addition to direct transfers in the form of assets valued at approximately USD 2 million, which raises the total economic benefit to USD 22.148 millions.

Environmental benefits include enrichment of biodiversity of the target area, restoration of ecosystems by growth of indigenous plants, stabilization of the lake and Nile shores, and protection of water resources from sand intrusion. The support given to communities in Southern Egypt to improve their productivity in the face of climatic changes will reduce their overexploitation of water resources on which the country depends.

Social benefits include enhancement of social cohesion by co-operation activities, community mobilization and establishment of shared community assets.

Table 6: Beneficiaries**CR4**

Output	Beneficiaries
Output 1.1.	20,000 people mobilized through community organizations, to participate in the baseline study, climate awareness sessions and community mobilization plans. Those including 30 volunteers in each location, 6,000 farmers in Lake Nasser Area, 7,000 in Assuit and 7000 in Sohag
Output 1.3	37,500 farmers and family members (including 7500 farmers, who will participate in various activities to enhance irrigation efficiency, and their families at an average family size of 5 persons). Those are divided as follows: 1000 farmer households in Aswan (Lake Nasser), 3500 in Sohag and 3000 in Assiut. Those proportions may change somewhat in the course of preparing the full proposal.
Output 1.4	7500 farmers (this is an approximate estimation but to be confirmed in the course of the full proposal when the actual number of interested people is determined)
Output 1.5	8,000 people being mainly women who will either participate directly in setting up of livestock and poultry hubs, or benefit from the offspring of hub seed animals and birds; and/or in training sessions on choice of animals and animal care as means of preparedness for climate shocks and climate change.
Output 2.1	300 people participating in the local knowledge forum, representing 80 people approximately from each village, plus civil society, local government and the academic community.
Output 2.2	500 technical staff from the concerned ministries, local government, parliamentarians, local council members, farmer unions, and specialized agricultural associations who will actively participate in scaling up of project interventions
Output 2.3	5000 participants in training, awareness raising at the policy and institutional level, and advocacy activities
Output 2.5	University students benefiting from the project experience
	78,800. + 1.7 million indirect beneficiaries over the long term representing the population of phase one of the first phase of the 1000 poorest village initiative

C. Describe or provide an analysis of the cost-effectiveness of the proposed project / programme.**Reformulated in response to CR6 and CR7**

The proposed project aims to provide concrete adaptation solutions to address threats of climate change to food security for a key deprived region in Egypt, namely Southern Egypt, which has the highest rates of temperature, drought and evapotranspiration, and at the same time is home to 45 percent of Egypt's rural population. The region is also classified as the poorest and most food insecure. The adaptation solutions are based on knowledge gained in the planning process that led to formulation of the Government's agricultural climate adaptation strategy and the National Adaptation Strategy.

The project focuses on a defined set of high priority issues and implements concrete adaptation interventions in locations that are representative of the majority of Southern Egypt. In parallel, the project also supports policy making and capacity building that will help the government to scale up through knowledge transfer and appropriate policies to the rest of Southern Egypt

The project is cost effective on a number of levels:

A. Cost effectiveness at the project management level:

1. As an alternative to establishing more costly field offices, the project will partner with local community organizations as the principal project implementing arm in the field. A full field office in each location would have cost over USD 300,000.
2. The project will recruit community volunteers who will assist in implementation and ensure their sustainability. More about the role of volunteers is described in Part II – Component 1. The project will support the negligible costs they incur in the process, mostly in the form of transport costs and consumables. This approach proved reliable and effective in various rural development projects in Egypt. This will help to lower the budget while anchoring the project within communities. It will also ensure that the majority of resources will go straight to the beneficiaries. Field staff on payroll to do the same work in various locations would have cost the project USD 250,000.
3. The project will partner with other significant projects in this area such as those funded by USAID and IFAD (see below), and aims through advocacy to help direct resources of the Government for development of this region towards scaling up of project results to reach the 1.7 million beneficiaries identified as “indirect beneficiaries”. More about the mechanisms to scale up project interventions to reach 1.7 million indirect beneficiaries is described in Part II – Component 2.

B. Cost effectiveness in comparison to adaptation alternatives:

Project alternative solutions were selected based on those included in the Agricultural Climate Adaptation and National Adaptation Strategies. Alternatives to the chosen solutions are real options for the government, either due to their mention in strategies or actual implementation in government projects. Table (7) below illustrates the cost comparison of different adaptation solutions.

Table 7:

Climate Risk to Food Security	Chosen Adaptation Measure(s)	Alternative Adaptation Measure(s)
<p>Uncertainty of Nile water over the coming years particularly in light of higher temperature and erratic rainfall. Water shortage is the most likely scenario, which poses serious risks to sustainability of agriculture and ability of the country to feed its people.</p>	<p>The project focuses on on-farm water conservation solutions through small-scale low-cost technological solutions (such as drip irrigation, gated pipes, timed usage of water by each user,.etc), in addition to soft management solutions such as introducing irrigation rotation/schedules, self-clearing of canals, among others. The project will set up demonstration pilots and will train local technicians who can participate in building, operating and maintaining those systems. The cost for this component is estimated at USD1.98 for a 1500 acre demonstration including training and upfront investments in demonstration plots. When scaled up, the cost per acre can be as low as USD 700, which is affordable for small farmers. It would be even more affordable if given through soft financing schemes, which is where the complementarity with the government's 1000 Village Initiative and the IFAD project would be important.</p>	<p>The Egypt water resources strategy (2030) refers to the need to build more dams and reservoirs and/or increase the capacity of the High Dam to better manage water storage. This is a much more expensive approach than what is being proposed.</p> <p>The same strategy recommends development of new water resources as a solution. It is feasible to dig wells in Nile valley farms, and for expansions into the desert. It is a less efficient and less sustainable approach from a natural resource standpoint. It is also more costly to carry out. A shallow well (20m deep) would cost approximately USD 900 per acre, in addition to maintenance and diesel costs for operation of the pump. A deeper well (100m deep) costs less per acre would cost USD 140,000 upfront investment to irrigate 800 acres, in addition to energy costs. However, those solutions are less natural resource efficient than those in the proposal.</p>
<p>Cultivation and animal raising fail due to rising temperature over time and due to climatic variability</p>	<p>The project aims to train farmers on choice of appropriate crops and to bring into application heat and drought tolerant varieties that were already developed after many years of research. This will bring quick results to farmers within the life of the project and will be more cost effective. It is also quicker to scale up. The cost estimated for this activity in total, including establishment of infrastructure,</p>	<p>The alternative as per the agricultural climate adaptation strategy is to breed new crops and animal varieties, which is longer term and a much more costly approach. A breeding program for one new variety can last up to 10 years and cost multiple millions.</p>

	<p>training and other inputs is USD 1.5 million. Where there are clear benefits for starting up a breeding effort for enhanced varieties, this may be applied in a participatory manner.</p>	
<p>Rural livelihoods and income are affected by climatic change and variability.</p>	<p>The project focuses on improving the efficiency and productivity of natural resources and increasing the resilience in agriculture as a means of protecting rural incomes.</p>	<p>There are alternatives to increasing rural incomes, such as linking farmers to markets, contract farming, food processing (increasing value of agricultural produce). However, those options do not necessarily improve on efficiency of use of natural resources so they are not adaptation solutions. Furthermore, the adaptation efforts presented here are pre-requisites for successful value chain enhancements. Also worth noting is that value chain opportunities require significant investments in cold chains, grain silos, and other infrastructure that can amount to millions of dollars, and this is a principal reason why it has not been a focus in Southern Egypt.</p> <p>Another alternative is finding off-farm jobs, which is beyond the scope of this project and is longer term in nature as it requires the coming together of conditions that attract new investments and create jobs. So far, off-farm jobs in Southern Egypt have been highly constrained, as indicated by the World Bank Local/Rural Development Strategy for Egypt (2007).</p>

C. Cost effectiveness from the economy's perspective:

From the economy's perspective, the project will realize significant economic returns in terms of per unit of water. This cost is not fully understood by communities due to the lack of water pricing policies. However, is undoubtedly a cost to the economy. Also from the economy's perspective, the project would save significant resources in food imports. Assuming a 20% loss in yield due to climatic change and shocks (variability), the country would stand to save over one billion USD in wheat imports alone every year, at a time when the economy is weak and requires support..

Also, a "no-project" scenario would cause loss of significant resources. Food production can be valued at some USD580 /acre³⁴ and southern Egypt has a cropped area of approximately 7 million acres.

Rural families in southern Egypt's derive 60 percent of their income from agriculture, so any losses can be significant from a standpoint of impacts on food security and nutritional status and for the Government food subsidy budget. The cost of food subsidy provided by the Government already amounts to USD 570 million per year for rural resident of Southern Egypt (approximately 3.8m households).

D. Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

Added (section inadvertently omitted in original submission), in response to CR8

The proposed project is in line with the **Egyptian National Adaptation Strategy**. The Strategy was issued in May 2011, and draws on other relevant strategies, in particular the Agricultural Climate Adaptation Strategy issued in 2010, and the Water Resources Strategy, and considered adaptation strategies developed by other countries as examples. The Strategy aims to help the country to adapt to climate change in the sectors mentioned in the Egypt second national communication, namely coastal zones, water resources, agriculture, tourism, health, population, housing and roads. The Strategy objectives in summary are:

- Increased resilience of the Egyptian community to risks and disasters resulting from climatic changes and their effects on the above mentioned sectors.

Old vs. New Lands in Egypt

The term "old lands" is used to refer to agricultural land that has been in cultivation for decades. New lands are those added to the agricultural plot through land reclamation, amounting in Egypt to millions of acres over the past four decades at least. Over the years, the classification widened to "old old lands", "new old lands", "old new lands" and "new new lands", demonstrating that land reclamation is an ongoing process.

Reclamation, while successful in many locations, faces the obvious stresses and limitations of water scarcity. To overcome this constraint, the government put in place efficient large scale irrigation (lined canals, drip or sprinkler irrigation), but this blueprint did not accommodate the needs of all climates and communities. This led to some communities creating parallel water management systems, hence the need for a bottom up approach to planning and ownership by the communities. Up to now, even in recent irrigation enhancement projects, water management systems are still being designed and implemented centrally, while communities continue to try to conduct their own self-help reclamation efforts to expand their assets. This situation calls for carefully revisiting this process. This project will join other organizations seeking to strengthen elected water user associations to expand their roles from water management to climate adaptation.

³⁴ Helmy, eid et al. Assessing The Economic Impacts of Climate Change on Agriculture in Egypt, 2006

- Developing adequate capacities to respond to and contain risks and disasters resulting from climate change through plans and specialized programs aiming to respond to the needs of local communities in this area.
- Reduction of disaster risks through early warning systems and support to concrete adaptation projects in the neediest locations.

The Strategy indicated its own determinants of success, which include political will; human and financial resources; institutional reform (mainstreaming climate adaptation into existing organizations); successful knowledge management system; adequate monitoring and evaluation systems; in addition to developing a national model for analysis and forecasting of climate change and its socio-economic risks.

Climatic risks and potential disasters were explained in detail in the strategy (which is consistent with the analysis in section (I)). The food-security related risks include temperature rise and heat shocks leading to increased evapotranspiration and crop water requirements; spread of pests; changes in agricultural plots as well as reduction in productivity; sea level rise leading to loss of land in the Delta. This is in addition to risks to water resources, which are shown in the scenarios to range from +20% to -90% losses in water resources. Those risks in turn pose additional risks to rural incomes, which affect small farmers and agricultural labour the most.

In the agricultural sector, the Strategy puts forward a number of complementary adaptation approaches, namely (1) compiling and analyzing data related to climate, land use, irrigation, livestock, and strategic food stocks, needed for decision support; (2) supporting relevant scientific research and training programs; (3) supporting agricultural policies that encourage farmers to select climate friendly crops and animal varieties; and (4) supporting livelihoods of small farmers who are most vulnerable to shocks through improved technologies and approaches.

This project addresses issues and recommendations of Egypt's **Initial and Second National Communications to the UNFCC**. In both reports agriculture is recognized as one of the most climate vulnerable sectors. The Second National Communication recommends the urgent need for wider adoption of heat tolerant crops and livestock varieties in rural Egypt in general, in addition to piloting sustainable integrated land and water management in rural areas.

E. Describe how the project / programme meets relevant national technical standards, where applicable.

The project complies with the national environmental law issued in law 4/1994, as well as national laws governing use of land and water resources.

The legal basis for irrigation and drainage is set in Law No. 12/1984 and its supplementary Law No. 213/1994 which define the use and management of public and private sector irrigation and drainage systems including main canals, feeders, and drains. The laws also provide legal directions for the operation and maintenance of public and private waterways and specify arrangements for cost recovery in irrigation and drainage networks.

The project falls within one of the main themes of Egyptian National Water Policy for the year 2017 particularly: 1-optimal use of available water resources and 2- protection of water quality and pollution abatement.

Where requested by Government and other stakeholders the project will undertake independent environmental assessments.

F. Describe if there is duplication of project / programme with other funding sources, if any.

Reformulated in response to CR9

There is no duplication of funding. The funds requested from the Adaptation Fund fill a gap in financing and complement other resources. This is demonstrated by the description below of ongoing programs in each of the project locations.

The Government invests significant resources in the development of the Southern Egypt region through multiple programs, the most prominent of which is **the 1000 village initiative**. The choice of the 1000 poorest villages was based on Egypt's 2006 poverty map, developed by the Ministry of Economic Development. In its first phase, the program has already targeted 151 villages with integrated basic services, including public works, skills development for economic empowerment, and environmental improvements. This project will assist the development of the 1000 village initiative by helping beneficiaries adapt to climatic change and shocks.

USAID currently invests in enhancing farmer income through value chain enhancement under an alliance between ACDI/VOCA (funded by USAID) and Heinz. This alliance supports 8000 small farmers in Upper Egypt by strengthening horizontal and vertical linkages in the horticultural value chain to increase productivity and produce higher quality tomatoes and alternate crops. Activities focus on transferring appropriate technologies and applying good agricultural practices. The USAID project succeeds a series of projects aiming at promoting agribusiness in Egypt. This work has formed the basis for a number of donor supported initiatives including the World Bank Rural/Local Development Strategy for Upper Egypt (2005).

The proposed project will work closely with USAID and the Government on sharing good practice and lessons learned on climate risks and adaptation measures that work.

The project will aim to create synergies with **IFAD**, which supports on-farm irrigation development in the old lands including rehabilitation and installation of improved on-farm irrigation networks, establishment of water users' organizations, training and capacity building of farmers, provision of loans for relevant activities, and applied research and extension activities. This will be facilitated through the cooperation between WFP and other U.N. agencies within the context of the **United Nations Development Framework** for Egypt.

G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

The Government considers this project to be a model for learning which will allow the national government and South Egypt governorates, together with local communities, the opportunity to test and review new approaches to enhancing resilience in the face of climate change. The project is explicitly designed to establish best practice and scale up successful activities to achieve climate change resilience at scale.

WFP Egypt has included knowledge management and evidenced based programming as part of its country strategy. Several measures, articulated in component 2, will be taken to ensure that concerned governmental authorities are taking the lead in the follow-up of the project and eventually its feeding into governmental policies and programs. Importantly, the government's Information and Decision Support Center (IDSC) will be involved in knowledge management as

they are the repository of information and the backstopping office of the Prime Minister in terms of development information and decision support

During the design process an evaluation strategy will be developed and aligned to the expected outcomes of the project. Evaluation in addition to monitoring will provide the basis for the evidence-based approach proposed in this project. Also during appraisal, the need for special studies based on the overall objectives of the project will be assessed.

The project's knowledge management activities will draw upon national actors and capabilities, and include community-based monitoring and evaluation. In addition, and specifically:

- In each village, a baseline will be established, both in qualitative terms (video footage, interviews with households, etc.) and quantitatively with respect to agreed upon indicators.
- At the Government's request, WFP will pay special attention to document and disseminate solutions introduced for adaptation and use in the context of the 1000 village initiative.
- Quarterly progress reports with an agreed-upon, standardized structure will be prepared by project management and partners; these will be shared with all villages as well as stakeholders at national level. They will – along with individual monitoring reports – form the basis for annual reports by project management.

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation.

This project is based on extensive consultations with a range of stakeholders and at all levels:

In May 2010, a stakeholder consultation was held in Aswan including beneficiaries of the WFP supported pilots in the region. The consultation, which included local community representatives, discussed the proposed Adaptation Fund project which was endorsed by stakeholders.

At about the same time a similar stakeholder consultation was held in Assiut for the Southern Egypt governorates. The consultation identified a number of food security challenges including responding to changes in the agricultural climate, and limited capacity and technology application in Upper Egypt villages. The consultation recommended transfer of technology and know-how and strengthening of government technical capacity and farmers' skills. The consultations were followed by summary meetings in Cairo among national actors where the current proposal was fine finalized.

I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

Egypt has been identified as particularly vulnerable to the impact of climate change. According to the Second National Communication reports (1999 and 2010 respectively) the most vulnerable sectors to climate change are coastal zones, water resources and agriculture.

The Egyptian Government recognizes the impacts of climate change on its food production capacity in Southern Egypt with a direct impact on food security in the country. It has thus

recognized the urgent need for adaptation technology and horizontal expansion as plausible means of filling a potentially huge food gap. This is manifested in the Government's issuance of the Agriculture Climate Adaptation Strategy, and the National Adaptation Strategy, both explicitly giving more urgency to adaptation techniques and developing new areas to produce more food.

The Government is targeting the poorest 1000 villages (out of an overall total of around 5000 villages), most of which are in Southern Egypt. The choice was based on Egypt's 2006 poverty map. However, agriculture in these villages also suffers from water scarcity and heat stress. Without investments that promise to make food production in these villages climate resilient the Government's 1000 village program would fail.

Adaptation alternative

The project will provide an integrated package of interventions based on tested technologies and approaches and transfer of knowledge and good practice to create robust, resilient, and sustainable livelihoods.

Adaptation interventions will include assisting farmer communities to adopt low-cost and efficient irrigation techniques; adopting available heat tolerant and water efficient crop varieties with high economic value; increasing organic matter in the soil; and applying productive income-generating agro-forestry as a means to reduce the impact of direct sunlight on agriculture, as well as to protect the area from sand encroachment. Livestock and poultry hubs will be established to apply already developed heat resistant varieties and to incorporate indigenous knowledge and experience in livestock herding under climatic changes and variability.

The project will also leave behind institutions that are able to obtain and analyze climate data, process it for use to aid policy making and investment decisions, technical staff who can help communities implement climate adaptation solutions, and policy makers who will be more aware of climate change and food security challenges in the country and how to address them.

PART III: IMPLEMENTATION ARRANGEMENTS

A., Describe the arrangements for project / programme implementation.

Executing entities will be the Ministry of Agriculture in collaboration with the Ministry of Environment and local authorities and organizations. In villages themselves, execution of most activities will be undertaken by community organizations after receiving training, and with assistance from Government and WFP as needed.

The Ministry of Agriculture's Climate Research Center is directly responsible for the overall adaptation strategy of Egypt in this sector. The Institute will be responsible for providing technical support to the project and ensuring that the project is achieving the intended targets within the National Agricultural Climate Adaptation Strategy. The Center will be responsible for managing climate monitoring and assist in the identification of suitable adaptation technologies.

The Ministry of Agriculture's Integrated Rural Development Unit supported by WFP will oversee field implementation, identification and deployment of local sources of expertise, and implementation monitoring. It will retain knowledge created under the project and use it to feed into the Ministry's policy and decision making process.

The Ministry of Environment and the Egyptian Environmental Affairs Agency (EEAA) will provide guidance for the overall project within its mandate and expertise, particularly as it relates to climate monitoring and adaptation. The Ministry of Environment will monitor implementation to ensure pollution prevention. In Wadi Allaqi conservation area near Lake Nasser, the EEAA Conservation Sector in Aswan will manage project activities and interventions in collaboration with the Ministry of Agriculture.

Local authorities will play a leading role in coordinating the implementation of Component 1, and will allocate land necessary for project activities. Local authorities will grant licenses for various activities as needed. It will facilitate and monitor implementation of project activities. More importantly, local authorities will ensure that the project properly complements and enhances the efficiency of the Government’s investments under the 1000 poorest village initiative.

The World Food Programme, Egypt Country Office will facilitate and supervise overall project implementation, oversee monitoring and evaluation; provide technical support; and report to the Adaptation Fund. WFP’s principal role is fiduciary, supervisory, supporting, coaching, providing technical knowledge, monitoring and disseminating lessons learned.

Execution of most activities will be undertaken by community organizations after receiving training, and with assistance from consultants. Specific community organization partners will be chosen as part of the baseline assessment.

Collaboration will be forged with Universities in the area, such as the Assiut and South Valley University which can be in a position to provide expertise needed for the technology adaptation/transfer process.

B. Describe the measures for financial and project / programme risk management.

WFP’s policy requires that risk assessment is conducted every year in all its programs. Table 7 summarizes key risks and mitigating factors.

Table 7: Risks and Responses

Risk	Likelihood	Response
Unforeseen changes in poverty, hunger, nutrition and other socio-economic variables due to external factors such as Triple F crisis, pandemics, climate change.	Medium	Strengthen community resilience through adaptation solutions. Early warning systems for food prices (integrated into WFP’s other programs in Egypt) Awareness on preparedness for and management of pandemic situations.

<p>CR3. Potential conflict between farmers engaged in adaptation and in applying new techniques, and traditional farmers who are not.</p>	<p>Low</p>	<p>This risk is low because land ownership is clear in the chosen locations and each farmer is allowed to conduct modifications on his/her plot. However, success of the project depends on collaboration between farmers. To ensure this collaboration and avoid conflict, several contracts will be signed as part of the early phase of implementation, including contracts between the project representative and the farmer organization(s) involved, and individual contracts between the project and each participating farmer. These contracts will clarify the roles and responsibilities of each entity and the modality for resolving conflicts.</p>
<p>Lack of trust in the government honoring its commitment to offer the announced benefits to the beneficiaries</p>	<p>Low</p>	<p>The development of Southern Egypt is a high priority on the Government agenda. The Government has always honored its commitment to beneficiaries in the area and it is highly unlikely that it will not continue to do so.</p>
<p>Non-sustainability of the project due to institutional or financial factors</p>	<p>Low</p>	<p>Previous studies proved the economic feasibility of agricultural productivity in the area. The project will also ascertain positive feasibility indicators through a pre-feasibility study.</p> <p>The project will also be building technical and institutional capacity which will increase sustainability.</p>
<p>Political Risk (also see Annex 1) i.e. non-smooth transition from the interim to the elected Government, leading to changes which impact project implementation.</p> <p>- Finally, all political parties of all ideological backgrounds already indicated they would honor Egypt's commitments towards international agreements, UNFCCC included</p>	<p>Medium</p>	<p>Educate and brief new officials on the project to avoid consequences of potentially slow handover</p> <p>Sign necessary agreements reflecting roles and responsibilities of government partners in advance of start-up</p> <p>Work collaboratively with governorate and local stakeholders involved to build ownership and maintain pressure on central government.</p>

C. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.

Monitoring will be undertaken on several levels (see Table 8):

- Field personnel based in the High Dam Lake Development Project Office in Aswan and in the EEAA office in Aswan will conduct day to day monitoring of activities and progress. Those units will jointly prepare quarterly progress reports for submission to WFP as the multilateral implementing entity and to the management of the executing entity for review. Quarterly progress report formats will be developed prior to start of the project and included in memoranda of understanding with those entities.
- WFP personnel and consultants will undertake regular visits to the project locations to ensure that targets are met. Visits will entail periodically convening focus group discussion and in-depth interviews with key stakeholders to elicit maximum information about progress and road blocks.
- Bi-annual Progress reports on the overall project will be prepared by WFP as the multilateral implementing entity.

Evaluation will be based on (1) a baseline assessment (to be funded from WFP’s own resources and included as part of the full proposal to the Adaptation Fund); (2) midterm evaluation of project early outputs, project management arrangements, progress of implementation, bottlenecks, and impact where relevant; (3) final evaluation of project outputs and outcomes.

WFP will lead on M&E and knowledge management through use of it’s WFP’s own systems and will ensure proper integration into government and research systems. As detailed in component 2, several measures will be taken to ensure that concerned governmental authorities are taking the lead in the follow-up of the project and eventually its feeding into governmental policies and programs.

Table 8: Monitoring and Evaluation Plan and Budget (indicative, to be finalized during appraisal)

Task	Responsible Parties	Budget US\$*	Time frame
Inception Workshop	WFP, MALR, EEAA and other stakeholders	15,000	Start of project
Baseline assessment	WFP, MALR, EEAA and other stakeholders	40,000	Start of project
Monitoring field visits	WFP, MALR, EEAA	48,000	Monthly over the four year project
Quarterly reports	WFP and executing agencies	6,000	At the end of each quarter

Annual Progress Reports (APR)	WFP and executing agencies	5,000	At the end of each year
Meetings of the Project Steering Committee	WFP	20,000	Every 3 months
Mid-term Evaluation MTE	WFP recruited external evaluation team	15,000	Month 24 of the project
Final Evaluation (FE)	WFP recruited external evaluation team	30,000	After project conclusion
Final Report	WFP and executing agencies	10,000	At least two months before the end of the project
TOTAL COST		189,000	

D. Include a results framework for the project proposal, including milestones, targets and indicator

A complete results framework for the project proposal, including milestones, targets and indicators, will be prepared during the project preparation phase.

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT³⁵ *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

<i>(Enter Name, Position, Ministry)</i>	<i>Date: (Month, day, year)</i>
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B. IMPLEMENTING ENTITY CERTIFICATION *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

⁶. Each Party shall designate and communicate to the Secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (.....list here.....) and subject to the approval by the Adaptation Fund Board, understands that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.

Name & Signature
Implementing Entity Coordinator

Date: *(Month, Day, Year)*

Tel. and email:

Project Contact Person:

Tel. And Email:

Annex 1: The Political Situation in Egypt

In January 2011, Egypt witnessed a popular uprising, which led to overthrowing of ex-President Hosni Mubarak, who ruled the country for 30 years. The uprising was driven by several stated factors, some of which are economic (e.g. low incomes, inability to buy food, high rates of unemployment particularly among youth), and others are political (concern about fraud in the last parliamentary election cycle). Since then, Egypt has witnessed rising levels of political participation, as evident in a referendum on constitutional changes, in which over 18 million people participated, vis-à-vis three million politically active people for the last 30 years. Egypt now has a full interim government, led temporarily by the Supreme Council of Armed Forces, who declared it would protect the democratic process and handover to an elected government soon. The Parliament was dismantled as a result of the demands of the uprising, and new parliamentary elections are tentatively scheduled for November/December 2011. The Constitution was amended to ensure free and democratic elections, but the new Parliament will design a full new constitution.

The proposal already stated that political risk is medium risk simply because of how the risk is intentionally worded. Our risk here is not government change, but simply that the handover from the current fully operational interim government to the elected government would not be a smooth transition.

By “not smooth” we mean:

- heightened conflict that affects assets constructed under the project: but this is not so much of a risk because assets would not start to appear on the ground except after one year of project start, as the focus initially would be on component one and preparations for components two and three.
- Delays in or incomplete handover of responsibilities from one official to another: this is a medium risk and WFP’s role here will be to educate and brief the new officials on the project.
- New government may change priorities: highly unlikely because food security and income generation are important outcomes of this project and will remain high on any government priorities. It is very hard to foresee a future government who would not consider food security a priority. Climatic variability is also felt harshly and already is affecting food production. Finally, all political parties of all ideological backgrounds already indicated they would honor Egypt’s commitments towards international agreements, including with the UNFCCC.

Additional. The political risk is also stated as medium risk because all considerations are taken in this proposal to ensure that adaptation techniques introduced are people-centered, driven by the people and managed by them during and beyond the project life. The project will conduct a participatory baseline assessment in the selected governorates. While the governorates are chosen based on climate analysis (see more on the vulnerability index in Annex 2 below), the choice of communities within governorates and their needs assessment will be done by trained and supervised community volunteers, and will aim to identify the suitable techniques for each location in a participatory manner. The project will rely on carefully selected community volunteers who represent the majority of communities to spread climate awareness. Building the capacity of communities to predict climate episodes, use climate forecasts to make on-farm decisions. The project will partner with community organizations and building their capacity to implement project activities through them and by participation of beneficiary farmers and households. The project will partner with the newly founded farmer union and specialized agricultural associations in Component 2, in the process of advocacy, capacity building, and scaling up. The project will conduct a midterm and final evaluation in participation with the community.

